

## PATENT

Atty. Dkt. No. NVDA/P001199

**IN THE CLAIMS:**

Claim 1 (Withdrawn): Connector for interfacing a graphics system to a computing device motherboard comprising:

a plurality of connector pins adapted for routing signals from a motherboard to a field-changeable graphics card,

wherein a first connector pin of the plurality of connector pins is adapted to detect the presence of the field-changeable graphics card and to cause the signals to be routed accordingly.

Claim 2 (Withdrawn): The connector of claim 1, wherein the connector is a right-angle edge connector mounted to the motherboard.

Claim 3 (Withdrawn): The connector of claim 1, wherein the connector comprises 230 connector pins.

Claim 4 (Withdrawn): The connector of claim 1, wherein a voltage detected by the first connector pin indicates a mode of the interfaced graphics system.

Claim 5 (Withdrawn): The connector of claim 4, wherein a high voltage detected by the first connector pin indicates that a passive loop-through card is interfaced to the connector.

Claim 6 (Withdrawn): The connector of claim 5, wherein the connector is adapted to cause a low voltage differential signaling (LVDS) signal to be routed from a driver through the loop-through card to an LVDS display panel.

Claim 7 (Withdrawn): The connector of claim 5, wherein the connector is adapted to cause a digital video interface (DVI) signal to be routed from a driver through the loop-through card to a DVI display panel.

## PATENT

Atty. Dkt. No. NVDA/P001199

Claim 8 (Withdrawn): The connector of claim 7, wherein the loop-through card comprises a transmission minimized differential signaling (TMDS) transmitter for driving TMDS outputs on DVI signals.

Claim 9 (Withdrawn): The connector of claim 4, wherein a low voltage detected by the first connector pin indicates that an active graphics card is interfaced to the connector.

Claim 10 (Withdrawn): The connector of claim 10, wherein the connector is adapted to cause a peripheral component interface (PCI) express signal to be routed from a driver to the active graphics card.

Claim 11 (Withdrawn): The connector of claim 10, wherein the active graphics card is adapted to receive the PCI express signal from the driver in order to generate a plurality of output display signals.

Claim 12 (Withdrawn): The connector of claim 11, wherein the active graphics card is adapted to generate low voltage differential signaling (LVDS), digital video interface (DVI), television (TV) and video graphics array (VGA) signals.

Claim 13 (Withdrawn): The connector of claim 1, wherein the connector is configured to allow a user of a computing device to replace a graphics system post-assembly.

Claim 14 (Withdrawn): The connector of claim 1, wherein the connector is adapted to allow a manufacturer to configure a single motherboard for at least two different graphics modes.

Claim 15 (Withdrawn): The connector of claim 1, wherein the connector is further adapted to maintain a graphics card in a substantially parallel, spaced apart relation relative to the motherboard.

## PATENT

Atty. Dkt. No. NVDA/P001199

**Claim 16 (Original): Apparatus comprising:**

a motherboard usable in a laptop computing device;  
a central processing unit mounted to the motherboard;  
an integrated graphics processor (IGP) mounted to the motherboard;  
a field-changeable graphics card interfaced to the motherboard; and  
a plurality of stuffing resistors adapted for interfacing the field-changeable graphics card to a plurality of output display panels,  
wherein the field-changeable graphics card resides in an independent, spaced-apart relation relative to the motherboard.

**Claim 17 (Original):** The apparatus of claim 16, wherein the apparatus further comprises an edge connector mounted to the motherboard and comprising a plurality of connector pins adapted for engaging the field-changeable graphics card in order to route signals from the motherboard to the field-changeable graphics card.

**Claim 18 (Original):** The apparatus of claim 17, wherein the field-changeable graphics card is a passive loop-through card.

**Claim 19 (Original):** The apparatus of claim 18, wherein a first set of stuffing resistors is adapted to interface the passive loop-through card to an output display panel for low voltage differential signaling (LVDS) signals.

**Claim 20 (Original):** The apparatus of claim 19, wherein a first connector pin on the edge connector is adapted to cause the LVDS signals to be routed from a driver, through the passive loop-through card and to an LVDS output display panel.

**Claim 21 (Original):** The apparatus of claim 19, wherein the first set of stuffing resistors is further adapted to interface the passive loop-through card to an output display panel for digital video interface (DVI) signals.

## PATENT

Atty. Dkt. No. NVDA/P001199

Claim 22 (Original): The apparatus of claim 21, wherein the passive loop-through card further comprises a transmission minimized differential signaling (TMDS) transmitter for driving TMDS outputs on DVI signal.

Claim 23 (Original): The apparatus of claim 19, wherein the first set of stuffing resistors is further adapted to interface the IGP to video graphics array (VGA) and television (TV) output display panels.

Claim 24 (Original): The apparatus of claim 17, wherein the field-changeable graphics card is an active graphics card comprising a graphics processing unit (GPU).

Claim 25 (Original): The apparatus of claim 24, wherein the edge connector is adapted to cause a peripheral component interface (PCI) express signal to be routed from a driver to the active graphics card.

Claim 26 (Original): The apparatus of claim 25, wherein the active graphics card is adapted to generate VGA, TV, LVDS and DVI signals.

Claim 27 (Original): The apparatus of claim 26, wherein a second set of stuffing resistors is adapted to interface the active graphics card to output display panels for VGA, TV, DVI and LVDS.

Claim 28 (Original): Apparatus comprising:  
a motherboard usable in a laptop computing device;  
a central processing unit mounted to the motherboard;  
an integrated graphics processor (IGP) mounted to the motherboard;  
a field-changeable graphics card interfaced to the motherboard; and  
a plurality of muxes adapted for interfacing the field-changeable graphics card to a plurality of output display panels,

## PATENT

Atty. Dkt. No. NVDA/P001199

wherein the field-changeable graphics card resides in an independent, spaced-apart relation relative to the motherboard.

Claim 29 (Original): The apparatus of claim 28, wherein the apparatus further comprises an edge connector mounted to the motherboard and comprising a plurality of connector pins adapted for engaging the field-changeable graphics card in order to route signals from the motherboard to the field-changeable graphics card.

Claim 30 (Original): The apparatus of claim 28, wherein the field-changeable graphics card is a passive loop-through card.

Claim 31 (Original): The apparatus of claim 30, wherein the plurality of muxes is adapted to interface the passive loop-through card to an output display panel for low voltage differential signaling (LVDS) signals.

Claim 32 (Original): The apparatus of claim 31, wherein a first connector pin on the edge connector is adapted to cause the LVDS signals to be routed from a driver, through the passive loop-through card and to an LVDS output display panel.

Claim 33 (Original): The apparatus of claim 31, wherein the plurality of muxes is further adapted to interface the passive loop-through card to an output display panel for digital video interface (DVI) signals.

Claim 34 (Original): The apparatus of claim 33, wherein the passive loop-through card further comprises a transmission minimized differential signaling (TMDS) transmitter for driving TMDS outputs on DVI signal.

Claim 35 (Original): The apparatus of claim 31, wherein the plurality of muxes is further adapted to interface the IGP to video graphics array (VGA) and television (TV) output display panels.

## PATENT

Att. Dkt. No. NVDA/P001199

Claim 36 (Original): The apparatus of claim 29, wherein the field-changeable graphics card is an active graphics card comprising a graphics processing unit (GPU).

Claim 37 (Original): The apparatus of claim 36, wherein the plurality of muxes is adapted to automatically reconfigure to receive and transmit signals from the active graphics card.

Claim 38 (Original): The apparatus of claim 36, wherein the edge connector is adapted to cause a peripheral component interface (PCI) express signal to be routed from a driver to the active graphics card.

Claim 39 (Original): The apparatus of claim 38, wherein the active graphics card is adapted to generate VGA, TV, LVDS and DVI signals.

Claim 40 (Withdrawn): Connector for interfacing a field-changeable card to a computing device motherboard comprising:

a plurality of connector pins adapted for routing signals from a motherboard to a field-changeable card, the field-changeable card having circuitry for performing a rendering function for use in the computing device,

wherein a first connector pin of the plurality of connector pins is adapted to detect the presence of the field-changeable card and to cause the signals to be routed accordingly.

Claim 41 (Withdrawn): The connector of claim 40, wherein the field-changeable card is a graphics card comprising a graphics processing unit.

Claim 42 (Withdrawn): The connector of claim 40, wherein the field-changeable card is an audio chip.

## PATENT

Atty. Dkt. No. NVDA/P001199

Claim 43 (New): The connector of claim 16, wherein the connector is further adapted to maintain a graphics card in a substantially parallel, spaced apart relation relative to the motherboard.

Claim 44 (New): The apparatus of claim 17, wherein a first connector pin of the plurality of connector pins is adapted to detect the presence of the field-changeable graphics card and to cause the signals to be routed accordingly.

Claim 45 (New): The apparatus of claim 17, wherein the connector is a right-angle edge connector mounted to the motherboard.

Claim 46 (New): The apparatus of claim 17, wherein a voltage detected by the first connector pin indicates a mode of the interfaced graphics system.

Claim 47 (New): The connector of claim 46, wherein a low voltage detected by the first connector pin indicates that an active graphics card is interfaced to the connector.

Claim 48 (New): The apparatus of claim 18, wherein a high voltage detected by the first connector pin indicates that a passive loop-through card is interfaced to the connector.

Claim 49 (New): The connector of claim 29, wherein the connector is further adapted to maintain a graphics card in a substantially parallel, spaced apart relation relative to the motherboard.

Claim 50 (New): The apparatus of claim 29, wherein a first connector pin of the plurality of connector pins is adapted to detect the presence of the field-changeable graphics card and to cause the signals to be routed accordingly.

Claim 51 (New): The apparatus of claim 29, wherein the connector is a right-angle edge connector mounted to the motherboard.

**PATENT**

Atty. Dkt. No. NVDA/P001199

**Claim 52 (New):** The apparatus of claim 29, wherein a voltage detected by the first connector pin indicates a mode of the interfaced graphics system.

**Claim 53 (New):** The connector of claim 52, wherein a low voltage detected by the first connector pin indicates that an active graphics card is interfaced to the connector.

**Claim 54 (New):** The connector of claim 29, wherein a high voltage detected by the first connector pin indicates that a passive loop-through card is interfaced to the connector.